REMARKS

In a Decision on Appeal from the Board of Patent Appeals and Interferences (hereinafter the "Board") mailed June 24, 2009, the Board reversed the rejections in the previous action from the Examiner. The Examiner reopened prosecution with the Director's approval, and cited new references in the outstanding nonfinal Office Action mailed July 29, 2009.

Applicants have carefully studied the newly cited references and the Examiner's comments relative thereto.

Claims 1-4, 7, and 17-19 are pending in the application.

Claims 5-6 have been cancelled.

Claims 8-16 have been withdrawn.

Claims 1 has been amended.

Claim 19 has been added.

FIGS. 8 and 8A have been added to the application.

The specification at paragraphs [0020]-[0021] and [0026]-[0027] has been amended. Paragraphs [0021.1], [0021.2], and [0029.1] have also been added to the specification.

Support for the amended and new claims, new drawings, and the amended and new paragraphs is found in the application as originally filed, for example, at page 1, lines 15-21, page 7, lines 18-25, page 8, lines 16-24, and in FIGS. 1-7.

No new matter has been added.

Reconsideration of the claims in light of the amendments and remarks made herein is respectfully requested.

The drawings were objected to under 37 CFR 1.83(a). The Examiner stated:

> The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "slots on a corresponding shaft" (line 5 of claim 1) and "a corresponding body" (line 8 of claim 1) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Note that contrary to the examiner's assertion in the final rejection mailed 8/14/2006, the board decision has found both the corresponding shaft and corresponding body to be structurally limiting of the splined component. Accordingly, these elements must be shown in the drawings with reference characters described in the written description. Note that mandrel (26) is used in making the splined component and as such is neither the "slots on a corresponding shaft" nor the "corresponding body" recited in the claims.

(Office Action at page 2).

In accordance with the Examiner's suggestions, new FIGS. 8 and 8A have been added to show the "slots on a corresponding shaft" as suggested by the Examiner. The "slots" on the outer surface of the corresponding shaft have been indicated by reference numeral "42". The phrase "a corresponding body" has also been removed from the claims. In view of the new drawings and the amendments to independent Claim 1, it is respectfully requested that the objection to the drawings be withdrawn.

The specification was objected to as failing to provide proper antecedent basis for the claimed subject matter under 37 CFR 1.75(d)(1) and MPEP § 608.01(o). The Examiner stated:

> Every element recited in the claims must be described in the written description with reference characters regarding the drawings; or the following features must be deleted from the claims: "slots on a corresponding shaft" (line 5 of claim 1), and "a corresponding body" (line 8 of claim 1).
>
> (Office Action at page 3).

Claim 1 was also objected to because of the certain informalities. The Examiner stated:

> - The phrases "slots on a corresponding shaft" (line 5 of claim 1) and "a corresponding body" (line 8 of claim 1) are not recited in the specification. Furthermore, it is unclear which drawing elements, if any, are represented by the above-mentioned phrases.
>
> Appropriate correction is required.
>
> (Office Action at page 4).

The Examiner's attention is respectfully directed to amended paragraphs [0026]-[0027] and new paragraphs [0021.1], [0021.2], and [0029.1]. The amended and new paragraphs describe the slots "42" of the externally splined shaft "38" when assembled with the internally splined component "22" of the invention. The reference characters "22", "38", and "42" are shown in previously presented FIG. 4 and new FIGS. 8 and 8A. The phrase "a corresponding body" has also been removed from the claims. Applicants respectfully request that the objections to the specification and independent Claim 1 be withdrawn in view thereof.

Claims 1-4, 7, and 17-18 were rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner stated:

- It is unclear if "a corresponding body" (line 8 of claim 1) is meant to refer to the same element as "a corresponding shaft" (line 5 of claim 1) or to some additional element.

- The term "small" (line 6 of claim 1) is relative and thus unclear. Would raised portions that are identical in size to splines read on the claim provided they are small with respect to some other element? See prior art rejection under 35 U.S.C. 102(b) below over Mangas USPN 5716276.

- It is unclear which, if any, of the previously recited "main body" (line 2 of claim 1) or "corresponding body" (line 8 of claim 1), the phrase "and body" (last line of claim 1) is meant to refer.

(Office Action at pages 4 and 5).

Attention is respectfully directed to amended independent Claim 1. The amendments to independent Claim 1 remove the phrase "a corresponding body". The phrase "small raised portions" has been changed to "raised portions" and further defined with the phrase "each of said raised portions having a cross-sectional area less than a cross-sectional area of each of said spaced apart splines". The last line of independent Claim 1 has also been amended to replace the phrase "and body" with the phrase "and the main body of the splined component". It is believed that the present amendments to independent Claim 1 resolve the rejections for failure to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Accordingly, the rejection of Claims 1-4, 7, and 17-18 under § 112, second paragraph, should be withdrawn.

Claims 1-4 and 17-18 were rejected under 35 U.S.C. 102(b) as being anticipated by Satou (U.S. Pat. No. 6,405,835). Claims 1-4 and 18 were rejected under 35 U.S.C. 102(b) as being anticipated by Wildhaber (U.S. Pat. No. 3,224,223). Claims 1, 2, 4, 7 and 17 were rejected under 35 U.S.C. 102(b) as being anticipated by Mangas (U.S. Pat. No.5,716,276). Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over Wildhaber in view of Mangas. The rejections are respectfully traversed in view of the present amendments to independent Claim 1.

Amended independent Claim 1 recites the patentable limitations of the present invention, and is reproduced below for the Examiner's convenience.

> 1. A splined component for transmitting torque comprising:
> a main body of formable metal and having a longitudinal axis;
> a plurality of spaced apart splines of formable metal being generally parallel to the longitudinal axis of and extending from said main body and being projections on said main body that cooperate with slots on a splined outer surface of a corresponding shaft enabling cooperative rotation; and
> a plurality of raised portions of said formable metal extending away from said main body and being generally parallel to the axis of said main body, **each of said raised portions having a cross-sectional area less than a cross-sectional area of each of said spaced apart splines, at least one of said raised portions adapted to contact the splined outer surface of the corresponding shaft and having sufficient material to permit at least one of a removal and a deformation of a portion of the at least one raised portion upon contact of the at least one raised portion with the splined outer surface of the corresponding shaft to maintain contact between the splined component and the corresponding shaft,** wherein said splines, raised portions, and the main body of the splined component are integral and homogenous.
>
> (Emphasis added).

The invention is a splined component (22) for transmitting torque. The splined component (22) includes a main body of formable metal having a longitudinal axis. A plurality of spaced apart splines (30) of formable metal are generally parallel to the longitudinal axis of and extend from the main body. The spaced apart splines (30) are projections on the main body that cooperate with slots (42) on an outer surface (36) of a corresponding shaft (38) to enable cooperative rotation of the splined component (22) and the corresponding shaft (38). The splined component (22) further includes a plurality of raised portions (34) of the formable metal that extend away from the main body and are generally parallel to the longitudinal axis of the main body. Each of the raised portions (34) has a cross-sectional area that is less than a cross-sectional area of each of the spaced apart splines (30). At least one of the raised portions (34) is adapted to contact the outer surface of the corresponding shaft (38) and has sufficient material to permit at least one of a removal and a deformation of a portion of the at least one raised portion (34) upon contact of the at least one raised portion (34) with the outer surface (36) of the corresponding shaft (38). The contact, and subsequent removal or deformation of the raised portion (34), advantageously maintains a contact between the splined component (22) and the corresponding shaft (38). The splines (30), raised portions (34), and the main body of the splined component (22) are also integral and homogenous.

Satou describes a brake device (31) having a rotating brake disk (32) with a cylinder block (15) disposed therein. The rotating brake disk (32) has internal arcuate projections (33) that cooperate with external arcuate grooves (17) on the cylinder block (15). (Satou at Abstract and in FIG. 2). The enlarged fragmentary sectional view of FIG. 2 shown in FIG. 4 reveals, however, that a small gap space (S1) exists between the arcuate grooves (17) of the cylinder block (15) and the opposing arcuate projections (33) of the rotating brake disks (32). (Satou at col. 8, lines 43-49 and in FIG. 4). Additionally, Satou discloses that "even when the radial contacting land portions 34 of the rotating brake disks 32 is brought into contact with the outer peripheral surface of the cylinder block 15 in a radial direction . . . the arcuate projections 33 are prevented from directly colliding against the arcuate grooves 17 of the cylinder block 15 in a radial direction". (Satou at col. 9, lines 26-37, emphasis added).

The Examiner also provided a marked-up, prior art FIG. 13 from Satou at page 6 of the outstanding Office Action. The mark-up identifies raised portions "100" disposed on opposite sides of an arcuate projection (25). However, the raised portions "100" are not "adapted to contact the splined outer surface of the corresponding shaft" as recited in the Applicants' claims. The raised portion "100" identified by the Examiner is not contacting the outer surface of the cylinder block (15). This is also evidenced by the presence of a gap between the second, unidentified raised portion, disposed on the opposite side of the arcuate projection (25) from the identified raised portion "100", and an outer surface of the cylinder block (15). Furthermore, there is no teaching in Satou that the raised portion "100" is at least one of removed and deformed by contact with the cylinder block (15).

Satou clearly does not disclose "at least one of said raised portions adapted to contact the outer surface of the corresponding shaft and having sufficient material to permit at least one of a removal and a deformation of a portion of the at least one raised portion upon contact of the at least one raised portion with the splined outer surface of the corresponding shaft to maintain contact between the splined component and the corresponding shaft", as recited in amended independent Claim 1. (Emphasis added). Accordingly, Claims 1-4 and 17-18 are not anticipated under § 102(b) in view of Satou, and the rejections should be withdrawn.

Wildhaber describes a toothed coupling including an internally toothed outer member (30) and an externally toothed inner member (32). The outer member (30) includes a plurality of straight teeth (31) that cooperate with a plurality of crowned teeth (33) formed on the inner member (32). (Wildhaber at col. 1, lines 51-59, and in FIG. 2). In the marked-up FIG. 2

provided in the outstanding Office Action at page 7, small raised portions "200" on the straight teeth (31) have been identified by the Examiner.

Applicants first observe that neither a structure nor a purpose for the "200" features identified by the marked-up FIG. 2 were described by Wildhaber. The "200" features are also not "raised portions", inasmuch as they are features adjacent fillets such as the fillets F1 shown in previously cited Mancuso reference. (See Reply Brief filed December 10, 2007, at page 3). The Board previously agreed with Applicants that the "purpose of the relief depths and the fillets is to create clearance between surfaces, rather than to create contact between surfaces". (Decision on Appeal mailed June 22, 2009, at page 8). Indeed, as shown in FIG. 2 of Wildhaber, the fillets forming the features "200" clearly create clearance between the ends of the crowned teeth (33) and the internally toothed outer member (30). The features "200" formed by the fillets of Wildhaber are not "adapted to contact the outer surface of the corresponding shaft and having sufficient material to permit at least one of a removal and a deformation of a portion of the at least one raised portion upon contact of the at least one raised portion with the splined outer surface of the corresponding shaft to maintain contact between the splined component and the corresponding shaft", as recited in amended independent Claim 1. Accordingly, Claims 1-4 and 18 are not anticipated by Wildhaber.

Mangas describes a yoke shaft (12) including a central body (26) having a plurality of external splines (30). Mangas also has a chamber (34) that is formed in the interior volume of the central body (226). (Mangas at col. 2,, lines 32-61, col. 3, lines10-16, and in FIG. 2). The citing of Mangas was based on an improper interpretation of the claims, which was related to the Examiner's rejection of the claims under § 112, second paragraph. In view of the clarifying amendments to independent Claim 1, which now recite the relative size of the raised portions and the splines, and consistent recite "main body" throughout the claim, it is respectfully requested that the rejection of Claims 1, 2, 4, 7 and 17 under § 102(b) over Mangas be withdrawn.

Claim 7 was rejected under 35 U.S.C. 103(a) as being unpatentable over Wildhaber in view of Mangas. As earlier established, neither Wildhaber nor Mangas disclose, teach, or suggest "at least one of said raised portions adapted to contact the outer surface of the corresponding shaft and having sufficient material to permit at least one of a removal and a deformation of a portion of the at least one raised portion upon contact of the at least one raised portion with the splined outer surface of the corresponding shaft to maintain contact between the splined component and the corresponding shaft", as recited in amended independent Claim 1. Since Claim 7 depends from and incorporates by reference each and every limitation of independent Claim 1, established hereinabove as being patentable over Wildhaber and Mangas, Claim 7 is likewise patentable.

With respect to new dependent Claim 19, Applicants have further defined the location of the contact being "between a base" of a spline on the corresponding shaft and "the raised portions disposed between the spaced apart splines" on the splined component. The recited structure is different from the various "raised portions" identified by the Examiner, and which are instead formed on the splines, e.g., as shown by features "100" in marked-up FIG. 13 of Satou and features "200" in marked-up FIG. 2 of Wildhaber. For at least this further reason, dependent Claim 19 is patentable over the cited art.

It is submitted that the present claims clearly define Applicants' invention and distinguish it from the art of record. Reconsideration of the application and a formal Notice of Allowance is respectfully solicited. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone Applicants' undersigned attorney at (419) 874-1100.

Respectfully submitted,

Donald R. Fraser, Reg. No. 17,919
(419) 874-1100
Jacob M. Ward, Reg. No. 56,754
(419) 874-1100

Fraser Clemens Martin & Miller LLC
28366 Kensington Lane
Perrysburg, Ohio 43551
419-874-1100
419-874-1130 (FAX)

DRF/JMW